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The 100 Most-cited Articles in *Library Philosophy and Practice* (e-journal): A Bibliometric Analysis

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ABSTRACT

Aim: The study aimed to evaluate the characteristics of the 100 most-cited articles published in the electronic journal *Library Philosophy and Practice* (LPP). Bibliometric studies to determine the attributes of the most-cited articles in the field of Library and Information Science (LIS) journals are deficient. The current study was conducted to fill this gap.

Methodology: We conducted a retrospective bibliometric analysis of the 100 most-cited articles of the LPP retrieved from Elsevier's Scopus database on 31st December 2020. The data was downloaded on Microsoft Excel Sheet for analysis. For comparison, the citations of data these articles were taken from Google Scholar during the first week of January 2021. The dataset was analyzed on the bibliometric indicators of citation impact, chronological distribution, authorship pattern, institutional and geographical affiliations of authors and, subject dispersion.

Results: The 100 most-cited articles of the LPP were published between the years 2001-2018 and these articles gained 1,678 and 8,158 citations in the Scopus and Google Scholar, respectively. The findings revealed that Nigeria (n=44), Delta State University of Nigeria (n=6), and Khalid Mahmood (n=4) were recognized as the most productive country, organization, and author, respectively. The single-author pattern was dominated (n=50) and “*Electronic Resources*” and “*Library Services*” were found as preferred areas of research. The article entitled, “*Knowledge Management as an important tool in Organisational Management: A Review of Literature*” by Omotayo, F. O. (2015) was found most influential in the Scopus database.

Conclusion: The LPP is an open-access journal that provides a platform for LIS professionals to share their innovative ideas and findings of original research with the rest of the world. This paper's findings can help to understand the research trends and bibliometric markers of the highly-cited articles in the LIS field.

Value/Originality: This is the first study on the 100 most-cited articles in the LIS field. Further, this kind of research can replicate to any subject category of LIS and other journals to determine the characteristics of the most-cited papers.

Keywords: Citation analysis; bibliometric; Library Philosophy and Practice; Top-cited articles;

INTRODUCTION

Innovative research and scholarly publications are considered significant factors for the sustainable development of any area of knowledge including, Library and Information Science (LIS) (Haq, Elahi & Dana, 2019). The publication growth in LIS has been manifold, especially during the last three decades, so the assessment of publications has also been getting popular (Haq & Alfouzan, 2019). The estimation of citations has frequently been used as the quality indicator of assessment. A highly cited journal has gained high impact factor and a highly cited paper is realized as an influential document in the academic arena (Bauer, Leydesdorff, & Bornmann, 2016). All well-known scholarly databases, as Web of Science, Scopus and Google Scholar have been providing the citation counts against each paper. The citation statistics are dynamic and ever-changing. The highly-cited article is seen as a milestone in the history of a particular journal and even in the field of knowledge. The research findings of the most-cited papers influence the philosophy and practice of the profession and highlight the major research trends (Alhibshi, et al., 2020; Hafeez, Malik & Noordin, 2018; Nason, Tareen, & Mortell, 2013; Picknett & Davis, 1999).

Bibliometric is the quantitative research method used to quantify the characteristics of publications, research collaboration, authorship patterns, subject dispersion and citation impact, etc. (Broadus, 1987). Dr. Eugene Garfield invented the concept of citation indexing and defined its impact on the body of knowledge. He opined that measuring and counting the number of citations determine the quality and excellence of scholarly and scientific papers (Garfield, 1955). Citation means, that how many times the particular paper has been cited by the other researchers in their documents. Citing the relevant literature is an important segment of research writing, strong proof of fair exchange and knowledge sharing. It acknowledges of the research work done by previous scholars and this practice further strengthens the knowledge-based society (Davis, 2011; Tanveer, et al., 2020). The analysis of citations explored the network of scholarly publications to evaluate the impact and influence of individual paper of this field (Alhibshi, et al., 2020; Aksnes, Langfeldt, & Wouters, 2019).

Journals are considered prominent channels of sharing the scientific and scholarly research to rest of the world. These channels of communication are receptive parameters of current and emerging trends in any area of knowledge. The findings published in journals or other legitimate sources of publication are considered an important part of the research process. (Warriach & Ahmad 2011; Rattan 2014; Haq & Al Fouzan, 2019). *Library Philosophy and Practice (LPP)* is the Scopus indexed, peer-reviewed, open accessed online journal published from the University of Nebraska – Lincoln, United States. The *LPP* publishes articles, reviews, case reports and surveys related to the philosophy and practice of LIS, covering the wide areas of LIS subject categories. *LPP* started its publication in 1988, its webpage revealed that the *LPP* has published 4,145 documents till December 31st, 2020 and online coverage is available since 2005.

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The rationale for assessing the highly-cited papers is that these papers have high research quality and the findings of these papers could enhance the understanding of the quality of the research (Levitt & Thelwall, 2009). The study aimed to evaluate the bibliometric characteristics of the 100 most-cited articles of the *LPP* with the following objectives:

1. To assess the total citations and average citations per article in the Scopus and Google Scholar databases
2. To segregate the articles by years with the number of citations in both databases

3. To measure the share of articles contributed by countries and institutions
4. To describe the authorship pattern and the productive authors in top-cited articles
5. To identify the subject categories, their extent and citation impact

LITERATURE REVIEW

Sun and Yuan (2020) analyzed the top-cited 1% articles on Library Science and Information Sciences Category published from 2009 to 2019 and indexed in the Web of Science database. A total of 501 articles have been identified and these articles received 21,127 citations with an average of 42.16 citations per article. These papers were contributed by 1,579 authors, 680 organizations and 59 countries. Thelwall, Mike, University of Maryland and the United States were found productive author, organization and country with 16, 19 and 255 papers, respectively. These articles were published in 40 journals and 413 (82%) of the articles were published in the top 20 journals having the first quartile. *MIS Quarterly* was found on the top with 68 (13.57%) articles, followed by the *Journal of American Medical Association* (n=65; 12.97%). Earlier, Bauer, Leydesdorff, & Bornmann, (2016) examined the top-cited 1% papers on Library Science and Information Science category in the Web of Science that was published between 2002 to 2012. A total of 305 papers were found, contributed by 798 authors belonged to 275 institutions.

Thanuskodi (2010) presented the bibliometric study of 249 articles of the *LPP* published between 2005 to 2009. The amazing growth was found from 10 papers in 2005 to 82 papers in 2009 and “*Library and Internet*” was found preferred area of research with 54 papers. More than one-third (38%) of the papers were written in two-author collaboration, while 31% of the papers were written by single-author. Slightly more than half (51%) of the papers were written in 4-6 pages and 9% of the papers were observed without references. Swain (2011) explored the characteristics of papers published in the *LPP* from 2004 to 2009 and the study identified 266 papers and 59% were written by a single author pattern. The majority of papers (n=140; 34%) were contributed by authors who belonged to Nigeria, followed by the United States, India, Iran and Pakistan. Akobundu Dike Ugah was found the most prolific author with seven papers during the targeted period. The study applied the Lotka law on authorship productivity and Bradford’s Law of scattering.

Verma, Sonkar and Gupta (2015) bibliometrically examined the 1,177 papers of the *LPP* published from 2005 to 2014, and the highest number of papers (n=198; 17%) were published in 2011. Single-author was dominated (48%) followed by two-author pattern (36%). All papers were classified into 17 subject categories and “*Library Services*” was found as favorite area of research with 175 papers. Amongst the contributed countries, Nigeria had been on the top with 433 (37%) papers followed by India (n=267; 23%), United States (n=186; 16%) and Pakistan (n=68; 6%). Saberi, Barkhan and Hamzehie (2019) analyzed the publications output of the *LPP* from 1998 to 2018, based on the retrieved data that was indexed in the Scopus database. A total of 1,397 papers were found and the highest number of papers (n=195) were published in 2011. These papers gained 2,563 citations with an average of 1.83 citations per paper. The study pointed out that the highly-cited 39 papers received citations range between the minimum 10 to maximum of 65 times and highly cited paper entitled “Using google analytics for improving library website content and design: A case study” was published in 2007 received 65 citations. Dr. Rubina Bhatti, University of Ibadan and Nigeria emerged as the most productive author, institution and country with 19, 78 and 549 papers, respectively.

Idress and Anwar (2013) explored the publication pattern of 701 papers of the *LPP* published during the period of seven years, from 2006 to 2012. The authors affiliated to 38 countries

contributed their research in this period and the authors belonged to Nigeria produced the maximum, 330 papers, followed by India (n=143), United States (n=104) and Pakistan (n=42). More than half of the papers (n=358; 51%) were written by a single author and 49% of the papers covered the length of 6-10 pages. Khalid Mahmood was found a prolific author with 11 papers in this study.

Haq (2015) assessed the contribution of Pakistani authors in the *LPP* from 2008 to 2017. A total of 93 papers were found with authorship affiliated to Pakistan and the highest number of papers (n=21) were published in 2013. The distribution of papers by subject showed that 28 papers were categorized in “Information seeking behavior / Information needs”. The majority of the papers (n=46; 49%) followed the two-author pattern and the Islamia University of Bahawalpur was found a most contributing institution, followed by the University of the Punjab. Rubina Bhatti, Khalid Mahmood and Farzana Shafique emerged as the top three contributing authors with 29, 20 and 11 papers, respectively.

Haq, et al., (2020) studied the publication growth of the *Journal of Association for Science and Technology* from 2014 to 2019. A data of 1,196 documents were retrieved from the Web of Science database and 85% of the documents consisted of the type articles, followed by book reviews and review articles. Indiana University System, United State was found the most contributing organization with 44 documents and the authors belonged to the USA produced 39% of the documents. An article “*The sharing economy: Why people participate in collaborative consumption*” published in 2016 was found the most-cited document with 669 citations. Jeong (2020) analyzed the journal citation network in the field of LIS in Korea. A dataset of 4,471 papers published in four journals was extracted Korean Citation Index. The selected papers gained 18,424 citations with an average of 4.12 citations per paper. The study findings revealed that the *Journal of the Korean Society for Library and Information Sciences* emerged as a most influential journal with the maximum impact of citations in the area of LIS.

Haq and Alfouzan (2019) investigated the 369 documents of the *Pakistan Library and Information Science Journal* published between 2008 to 2017. About two-third of the documents were published in the English language and a solo author produced 60% of the documents. Verma and Shukla (2018) assessed the 222 papers contributed by 377 authors published in *Library Herald* from 2008 to 2017. The single author pattern (44%) was subjugated and International authors contributed 20% of the papers.

A 2011 study on *Electronic Library Journal* scrutinized 578 papers published from 2000 to 2010 and 47% of papers were written by a single author. *Library and Internet* was found a preferred area of research followed by *Digital Libraries* (Hussian, Fatima, & Kumar, 2011). Warriach and Ahmad (2011) examined the 111 documents that were published in the *Pakistan Journal of Library and Information Science* during 1995 to 2010 and the highest number of documents (n=16) were published in 1997. The majority of documents (86%) were written by a single author pattern and the University of the Punjab contributed 49% of the documents. More than half (53%) of the document types were comprised of the research followed by Essay (17%) and biography (8%). Bakri and Willett (2008) evaluated the research output of the *Malaysian Journal of Library and Information Science* for the period of six years (2001-2006). Almost half of the papers (47%) were contributed by foreign authors.

RESULTS

The most-cited 100 articles of the *LPP* were published between the years from 2001 to 2018. The highest number of articles (n=17) was published in the year 2011, followed by 2009 and 2010 with 12 articles each. Forty-one percent of the articles were published in the span of three years from 2009 to 2011. The lowest number of the article (n=1) was published in the years 2001 and 2018.

The analysis of citations shows that the 100 most-cited articles received 1,678 citations cited from 27 to 88 times as reflected in the Scopus database with a mean of 16.78 citations per publication. We also extracted the citation data of these targeted articles from the Google Scholar database for comparison, which resulted in 8,158 citations, cited from 27 to 950 times with an average of 81.58 citations per article (Appendix-1).

The highest citation impact with 44.33 and 204.33 was found in the Scopus and Google Scholar respectively, gained by the three articles that were published in 2015. The lowest citation impact (n=11) was found with one publication of 2018 (Table-1).

Table-1 Distribution of articles, total citations based on Scopus and Google Scholar (GS), and Average citations per article (ACPA) by year

Year	Articles	Scopus Citations	ACPA	GS Citations	ACPA
2001	1	21	21.00	63	63.00
2002	3	49	16.33	196	65.33
2004	2	24	12.00	98	49.00
2005	5	99	19.80	307	61.40
2006	8	117	14.63	417	52.13
2007	8	234	29.25	1,444	180.50
2008	9	135	15.00	714	79.33
2009	12	160	13.33	737	61.42
2010	12	171	14.25	934	77.83
2011	17	234	13.76	1,091	64.18
2012	6	92	15.33	443	73.83
2013	5	64	12.80	282	56.40
2014	5	91	18.20	565	113.00
2015	3	133	44.33	613	204.33
2016	3	43	14.33	228	76.00
2018	1	11	11.00	26	26.00
Total	100	1,678	16.78	8,158	81.58

Distribution of articles by country

The distribution of most-cited articles by country shows (Table-2) that the 150 authors belonged to 14 countries of the world was identified. There are six countries with one article each while three countries are having two articles each. The Top-five countries contributed between the range of 4 to 44 articles. Nigeria has been found the most productive and contributing country with 44 articles, and these articles gained 796 and 4,815 citations with 18.09 and 109.43 citations per article in the

Scopus and Google Scholar, respectively. The United States, where the *LPP* has been publishing stands on the second rank with 19 articles, followed by India (n=15) and Pakistan (n=8). The highest citation impact, 22.00 in the Scopus and 116.00 in the Google Scholar was found against the four publications of Ghana.

Table-2 Distribution of articles, citations based on Scopus and Google Scholar (GS) and Average citations per article (ACPA) by country

Sr. No.	Country	Articles	Scopus Citations	ACPA	GS Citations	ACPA
1	Nigeria	44	796	18.09	4,815	109.43
2	USA	19	344	18.11	974	51.26
3	India	15	223	14.87	990	66.00
4	Pakistan	8	110	13.75	408	51.00
5	Ghana	4	88	22.00	464	116.00
6	Bangladesh	2	23	11.50	124	62.00
7	Malaysia	2	23	11.50	80	40.00
8	Philippine	2	24	12.00	56	28.00
9	Iran	1	11	11.00	17	17.00
10	Jordan	1	11	11.00	34	34.00
11	Oman	1	13	13.00	84	84.00
12	South Africa	1	17	17.00	106	106.00
13	Tanzania	1	12	12.00	85	85.00
14	Uganda	1	13	13.00	111	111.00

Distribution of articles by Institutions

A total of 149 authors belonged to 89 institutions/universities of 14 countries have contributed to the 100 most-cited articles of *LPP*. Three-fourth of the institutions (n=73; 82%) contributed one paper each and the topmost 16 institutions contributed more than one article each shown in table-3. Among the top 16 institutions, ten belonged to Nigeria, two from Pakistan and one each from India, Ghana, United States, and Bangladesh. Delta State University, Nigeria has been on the top with eight articles followed by the University of Ibadan, Nigeria, University of the Punjab Pakistan, and the University of Nigeria with 6, 6, and 4 articles, respectively. The highest citation impact, 36.50 in the Scopus and 271.00 in the Google Scholar was found against the six articles of the University of Ibadan, Nigeria, followed by the University of Botswana, Nigeria with 34.00 and 351.67 citations per article in the Scopus and Google Scholar respectively.

Comparison of authorship pattern and citations impact

A total of 162 authors including multiple counts contributed to 100 most-cited papers with an average of 1.62 authors per article. Table-4 presented the ratio of single-author (n=50) and multi-author articles (n=50), which was found equal. In multi-author articles, two-author and three-author patterns were found in 39 and nine articles, respectively. Two articles were found with the maximum range of four authors. The analysis of citation impact against the authorship pattern exposed interesting results, in the Scopus database, single-author articles received the highest ratio

of (n=882) citations while the multi-author articles gained comparatively less (n=796) number of citations. The number of citations was found higher in the multi-author articles (n=4360) as compared to single author (n=3798) articles in the Google Scholar. The collaboration pattern of three-author received the maximum citation impact. The findings of a correlation between authorship pattern and citation impact were found slightly higher in the Scopus (0.9883) as compared to the Google Scholar (n=0.9539).

Table-3 Distribution of articles, citations based on Scopus and Google Scholar (GS), and Average citations per article (ACPA) by institutions

Sr. No.	Institutions/Affiliation	Articles	Country	Scopus Citations	ACPA	GS Citations	ACPA
1	Delta State University	8	Nigeria	111	13.88	734	91.75
2	University of Ibadan	6	Nigeria	219	36.50	1626	271.00
3	University of the Punjab	6	Pakistan	79	13.17	264	44.00
4	University of Nigeria	4	Nigeria	81	20.25	380	95.00
5	Annamalai University	3	India	42	14.00	183	61.00
6	Islamia University of Bahawalpur	3	Pakistan	39	13.00	159	53.00
7	University of Botswana	3	Nigeria	102	34.00	1055	351.67
8	University of Lagos	3	Nigeria	59	19.67	388	129.33
9	Bayero University	2	Nigeria	25	12.50	168	84.00
10	Federal University of Technology	2	Nigeria	39	19.50	169	84.50
11	Ladoke Akintola University of Technology	2	Nigeria	30	15.00	192	96.00
12	Michael Okpara University of Agriculture	2	Nigeria	28	14.00	132	66.00
13	Redeemers University	2	Nigeria	25	12.50	117	58.50
14	University Of Ghana	2	Ghana	45	22.50	214	107.00
15	University of Nebraska	2	USA	26	13.00	38	19.00
16	University of Rajshahi	2	Bangladesh	23	11.50	124	62.00

Productive authors

A total of 149 authors identified individually, an immense majority of authors (n=141; 94.63%) have contributed in one paper each in 100 most cited articles. Table-5 showed the top authors, eight authors were recognized who contributed more than one article. The analysis of the top eight authors' affiliated country revealed that four authors belonged to Nigeria, two from Pakistan and one each from Bangladesh and India. Khalid Mahmood of University of the Punjab, Pakistan emerged as the most productive author with four articles followed by three authors, Popoola, Tella and Thanuskodi with three articles each. Khalid Mahmood secured the top position in citation-count and ACPA as per the Scopus database but C.O Ayeni of University of Ibadan, Nigeria gained the highest citation impact as per Google Scholar citations.

Table-4 Authorship pattern verses citation impact

Authorship Pattern	Number of Articles	Scopus Citations	ACPA	GS Citations	ACPA
Single-author	50	882	17.64	3,798	75.96
Two-author	39	575	14.74	2,673	68.54
Three-author	9	198	22.00	1,606	178.44
Four-author	2	23	11.50	81	40.50

Table-5; Top-eight productive authors

Sr. No.	Author	Articles	Affiliation	Scopus Citation	ACPA	GS Citations	ACPA
1	Mahmood, Khalid	4	University of the Punjab, Pakistan	154	38.50	193	48.25
2	Popoola, S.O.	3	University of Ibadan, Nigeria	107	35.67	1135	378.33
3	Tella, Adeyinka	3	University of Botswana, Nigeria	102	34.00	1055	351.67
4	Thanuskodi, S.	3	Annamalai University, India	42	14.00	183	61.00
5	Ayeni, C.O.	2	University of Ibadan, Nigeria	88	44.00	979	489.50
6	Islam, Md.S.,	2	University of Rajshahi, Bangladesh	23	11.50	124	62.00
7	Shafique, F.	2	Islamia University of Bahawalpur, Pakistan	26	13.00	121	60.50
8	Ugah, A.D.	2	Michael Okpara University of Agriculture, Nigeria	28	14.00	132	66.00

Distribution of articles by Subjects

All 100 articles have been dispersed into 43 broad subject categories. There are 20 subject categories with one article each and eight categories consisted of two articles each. Top-15 subject categories having more than two articles are presented in Table-6. The highest numbers of articles (n=13) were written on the subject category of *Electronic Resources*, followed by *Library Services* (n=12) and *Information Communication Technologies* (n=10). Almost one-third of the top-cited articles have been written in these three topmost subject categories. Articles on *Electronic Resources* gained the highest number of citations but as far as the citation impact is concerned, the subject area of *Reading Habits* has received the maximum citation impact in both the Scopus and Google Scholar databases.

DISCUSSION

LPP is an open-access journal that has been publishing papers on the philosophy and practice of LIS. We selected some bibliometric studies on *LPP* for review of the literature. The latest study analyzed the 1,397 papers published from 1998 to 2018 and these papers gained 2,563 citations with an average of 1.83 citations per paper. The study pointed out that the highly-cited 39 papers. University of Ibadan and Nigeria emerged as the most productive institution and country with 78

and 549 papers, respectively (Sabeti, Barkhan & Hamzehie, 2019). Haq (2018) studied the 93 papers contributed by Pakistani authors from 2008 to 2017. The highest number of papers (n=28) were written on the subject of “*Information seeking behavior / Information needs*”. Slightly less than half (49%) of the papers were written by the two author pattern. Islamia University of Bahawalpur and Rubina Bhatti have emerged as most contributing institution and author respectively. Another study published in 2015 exposed that the single-author pattern dominated (48%) in 1,177 articles that were published from 2005-2014. “*Library Services*” was found topmost category of papers. More than one-third (37%) papers were contributed by Nigeria (Verma, Sonkar and Gupta, 2015). One more study examined 701 papers of the *LPP* contributed by the authors of 38 countries published from 2006 to 2012 and 47% of papers were produced by Nigeria and 51% of papers were written by a single author. Khalid Mahmood was found a prolific author in this period (Idress & Anwar, 2013). Swain (2011) examined six-years’ records of the *LPP* from 2004 to 2009 and he found that 59% of the papers were written by a single author pattern. The highest number of papers (n=140; 34%) were contributed by Nigerian authors and Akobundu Dike Ugah was found the most prolific author. Thanuskodi (2010) stated that an average of 50 papers was published in the interval of 2005 to 2009 and 31% of the papers were written by a single author.

Table-6, Distribution of articles by Subjects

Sr. No.	Subject Category	Articles	Scopus Citations	ACPA	GS Citations	ACPA
1	Electronic Resources	13	202	15.54	1079	83.00
2	Library Services	12	192	16.00	924	77.00
3	Information Communication Technologies (ICTs)	10	136	13.60	883	88.30
4	Academic Libraries	6	92	15.33	397	66.17
5	Bibliometrics	6	85	14.17	267	44.50
6	Information Needs	5	56	11.20	284	56.80
7	Information Resources	5	71	14.20	380	76.00
8	Information Seeking Behaviour	5	72	14.40	295	59.00
9	User Satisfaction	5	67	13.40	184	36.80
10	Digital Libraries	3	38	12.67	199	66.33
11	Information Literacy	3	44	14.67	166	55.33
12	Information Services	3	36	12.00	272	90.67
13	Internet Use	3	48	16.00	199	66.33
14	Public Libraries	3	39	13.00	221	73.67
15	Reading Habits	3	52	17.33	329	109.67

The Nigerian authors have been extensively submitting their papers in the *LPP*. Anwar and Zhiwei (2020) calculated the share of Nigerian authors in the *LPP* from 2008 to 2013. A total of 226 papers were found and the highest number (n=76; 34%) were published in 2010. The solo author pattern contributed in 114 (50.44%) papers and three authors (Dike Agah, Chimezie Patric Uzubgu and Akobuirdy D Ugah) ranked as the most prolific with five papers each. The highly cited paper, “*Application of ICTs in Nigerian Secondary Schools*” written by EE Adomi, E Kpangban has received 197 citations.

The current study evaluated the attributes and bibliometric markers of the 100 most-cited articles of the *LPP*. The citation analysis describes the impact and influence of paper(s) on the particular subject area. Levitt and Thelwall (2009) examined the 82 highly-cited papers on Library Science and Information Science category published before 2007. A total of 82,407 papers were found in this category but only 82 papers were identified as highly-cited and these papers gained 901 citations. These papers were published between the years of 1956 to 2001. More than one-third (34%) of the papers were published in *MIS Quarterly* and the collaborative research received more citations as compared to a single-author's paper. The study concluded that the quality of research attracts the citations but the interdisciplinary research gains more attention. Two studies were found on the citation analysis of the top 1% most-cited papers on the Web of Science database (Bauer, Leydesdorff, & Bornmann, 2016; Sun & Yuan 2020). Both studies were comprised of a ten-year period, the first study covered from 2002 to 2012, while the second study covered the period from 2009 to 2019. These studies highlighted the salient features and bibliometric parameters of the top-cited papers. Mushtaq and Zia (2019) assessed the characteristics of highly-cited articles published in eight LIS journals of the Emerald Insight database. The study selected the 30 highly-cited articles. The evaluation of the dataset revealed that the majority of articles were published in the *Library Hi-Tech*. The bulk of articles were contributed by the authors of the United States and single-author pattern subjugated. The preferred area of research was found "Social Media" and the analysis of the research method resulted that the survey method was found favorite amongst the highly cited articles.

The dataset of the 100-most-cited articles of the *LPP* was extracted from the Scopus database for the current study. These papers received 1,678 citations, further, the Google Scholar (GS) database was also used to collect the citations of these articles for comparison and GS produced 8,158 results. The coverage of knowledge in GS is much comprehensive as compared to the Scopus. The analysis of articles by country showed that the authors belonged to 14 countries identified in the 100 most-cited articles and Nigeria has been ranked on the top with 44 articles, followed by the United States and India and Pakistan. The authors affiliated to 89 institutions were found but 73 institutions contributed in one article each and 16 institutions have more than one article. The highest number of articles (n=8) were found against Delta State University of Nigeria. The single author pattern was dominated and the higher number of citations were also gained by single-author in the Scopus but multi-author articles received more citations in the analysis of GS. Khalid Mahmood of University of the Punjab emerged as the most prolific with 4 articles and C.O Ayeni of University of Ibadan, Nigeria gained the highest citation impact. The majority of articles were written on the subject of *Electronic Resource* and *Library Services* but the highest citation impact was gained by the articles on *Reading Habits*.

The 100 most-cited articles received 1,678 citations, with the lowest number of citations was observed 27 and the maximum was found 88 citations. The 100 most-cited articles were published during the interval of 18 years from 2001 to 2018. A total of 19 articles were published in the first phase (2001-2006) and these articles gained 310 citations with an average of 19.68 citations per article. The maximum articles (n=64) were published in the second phase (2007-2012) and these papers gained 1,026 citations with an average of 16.03 citations per article and the lowest number of articles (n=17) were published in the last phase (2013-2018) and these articles received 342 citations, with an average of 20.11 citations per articles.

CONCLUSION

Citation is one of the quality indicators of bibliometric and helps to understand the influence of article(s) in a specific field. The evaluation of most-cited articles is widespread in medical and allied health sciences because it is estimated that 30% of the total global publications are related to biomedical sciences. The highly cited paper and set of papers support to develop theories and a better understanding of the particular subject. Feijoo et al., (2014) opined that the citation-count of an article does not necessarily reflect the quality but gives some evidence of productive authors, institutions, country and research trends.

This is the first study to determine the characteristics of the 100 most-cited articles in the field of LIS and even in *LPP*. These articles were published in the span of 18 years (2001-18). This period has been divided into three phases of six-year duration. The highest number of most-cited articles were published in the second phase (2007-2012) but the highest citation impact (20.11) was found last phase (2013-2018). The review of relevant bibliometric literature on the *LPP* reveals that Nigeria has been the most contributing country, in the present study, surprisingly, Nigeria has maintained its status with 44 articles. *Electronic Resources* and *Library Services* have highly represented subject categories in the most-cited articles in the *LPP*.

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Appendix-1

Sr. No.	Bibliographic description of most-cited articles of LPP	Scopus Citations	Google Scholar Citations
1	Omotayo, F. O. (2015). Knowledge Management as an important tool in Organisational Management: A Review of Literature. Article No. 1238.	88	399
2	Tella, A., Ayeni, C. O., & Popoola, S. O. (2007). Work motivation, job satisfaction, and organisational commitment of library personnel in academic and research libraries in Oyo State, Nigeria. Article No. 118.	77	950
3	Fang, W. (2007). Using Google Analytics for improving library website content and design: A case study. Article No. 121.	71	184
4	Shahid, S. Md. (2005). Use of RFID technology in libraries: A new approach to circulation, tracking, inventorying, and security of library materials. Article No. 62.	35	86
5	Owusu-Acheaw, M., & Larson, A. G. (2014). Reading habits among students and its effect on academic performance: A study of students of Koforidua Polytechnic. Article No. 1130.	30	202
6	Ezeani, C. N., & Igwesi, U. (2012). Using social media for dynamic library service delivery: The Nigeria experience. Article No. 814.	30	123
7	Egberongbe, H. S. (2011). The use and impact of electronic resources at the University of Lagos. Article No. 472.	30	193
8	Kingrey, K. P. (2002). Concepts of information seeking and their presence in the practical library literature. Article No. 36.	25	80

9	Kwadzo, G. (2015). Awareness and usage of electronic databases by geography and resource development information studies graduate students in the University of Ghana. Article No. 1210.	24	75
10	Eke, H. N., Omekwu, C. O., & Odoh, N. J. (2014). The use of social networking sites among the undergraduate students of University of Nigeria, Nsukka. Article No. 1195.	24	141
11	Anunobi, C. V., & Okoye, I. B. (2008). The role of academic libraries in universal access to print and electronic resources in the developing countries. Article No. 189.	24	101
12	Nok, G. (2006). The challenges of computerizing a university library in Nigeria: the case of Kashim Ibrahim Library, Ahmadu Bello University, Zaria. Article No. 78.	23	103
13	Mingle, J., & Adams, M. (2015). Social media network participation and academic performance in senior high schools in Ghana. Article No. 1286.	21	139
14	Sonntag, G., & Palsson, F. (2007). No longer the sacred cow—no longer a desk: transforming reference service to meet 21st century user needs. Article No. 111.	21	46
15	Buschman, J. (2005). On libraries and the public sphere. Article No. 11.	21	62
16	Herold, K. R. (2001). Librarianship and the philosophy of information. Article No. 27.	21	63
17	Thanuskodi, S. (2010). Bibliometric analysis of the journal <i>Library Philosophy and Practice</i> from 2005-2009. Article No. 437.	20	87
18	Mahajan, P. (2006). Internet use by researchers: A study of Panjab University, Chandigarh. Article No. 79.	20	76
19	Hosburgh, N. (2011). Librarian faculty status: What does it mean in academia?. Article No. 572.	19	32
20	Issa, A. O., Blessing, A., & Daura, U. D. (2009). Effects of information literacy skills on the use of e-library resources among students of the University of Ilorin, Kwara State, Nigeria. Article No. 245.	19	74
21	Ansari, M. N., & Zuberi, B. A. (2010). Use of electronic resources among academics at the University of Karachi. Article No. 385.	18	106
22	Oyewusi, F. O., & Oyeboade, S. A. (2009). An empirical study of accessibility and use of library resources by undergraduates in a Nigerian state university of technology. Article No. 277.	18	100
23	Popoola, S. O. (2008). The use of information sources and services and its effect on the research output of social scientists in Nigerian universities. Article No. 183.	18	116
24	Igun, S. E. (2006). Human capital for Nigerian libraries in the 21st century. Article No. 82.	18	61
25	Weiner, S. G. (2005). The history of academic libraries in the United States: a review of the literature. Article No. 58.	18	72
26	Durodolu, O. O. (2016). Technology acceptance model as a predictor of using information system to acquire information literacy skills. Article No. 1450.	17	106

27	Haliso, Y. (2011). Factors affecting information and communication technologies (ICTs) use by academic librarians in Southwestern Nigeria. Article No. 571.	17	81
28	Echezona, R. I., & Ugwuanyi, C. F. (2010). African university libraries and internet connectivity: Challenges and the way forward. Article No. 421.	16	61
29	Adomi, E. E., & Kpangban, E. (2010). Application of ICTs in Nigerian secondary schools. Article No. 345.	16	249
30	Naseer, M. M., & Mahmood, K. (2009). LIS research in Pakistan: an analysis of Pakistan Library and Information Science Journal 1998-2007. Article No. 275.	16	37
31	Ugah, A. D. (2007). Obstacles to information access and use in developing countries. Article No. 160.	16	47
32	Roy, S. B., & Basak, M. (2013). Journal of Documentation: a bibliometric study. Article No. 945.	15	17
33	Iwhiwhu, B. E., & Okorodudu, P. O. (2012). Public library information resources, facilities, and services: User satisfaction with the Edo State Central Library, Benin-City, Nigeria. Article No. 747.	15	103
34	Polger, M. A., & Okamoto, K. (2010). "Can't anyone be a teacher anyway?": Student Perceptions of Academic Librarians as Teachers. Article No. 328.	15	37
35	Womboh, B. S. H., & Abba, T. (2008). The state of information and communication technology (ICT) in Nigerian university libraries: The experience of Ibrahim Babangida Library, Federal University of Technology, Yola. Article No. 224.	15	68
36	Chikate, R. V., & Patil, S. K. (2008). Citation analysis of theses in library and information science submitted to University of Pune: A pilot study. Article No. 222.	15	64
37	Ogbomo, M. O., & Ogbomo, E. F. (2008). Importance of information and communication technologies (ICTs) in making a healthy information society: a case study of Ethiopia east local government area of delta state, Nigeria. Article No. 219.	15	57
38	Tyler, D. C. (2011). Patron-driven purchase on demand programs for printed books and similar materials: A chronological review and summary of findings. Article No. 635.	14	17
39	Batool, S. H., & Ameen, K. (2010). Status of technological competencies: A case study of university librarians. Article No. 466.	14	39
40	Trivedi, M. (2010). Digital libraries: functionality, usability, and accessibility. Article No. 381.	14	97
41	Ademodi, D. T., & Adepoju, E. O. (2009). Computer skill among librarians in academic libraries in Ondo and Ekiti States, Nigeria. Article No. 274.	14	57
42	Adekunle, P. A., Omoba, R. O., & Tella, A. (2007). Attitudes of librarians in selected Nigerian universities toward the use of ICT. Article No. 159.	14	76
43	Akpojotor, L. O. (2016). Awareness and usage of electronic information resources among postgraduate students of library and information science in Southern Nigeria. Article No. 1408.	13	59

44	Adeleke, D. S., & Emeahara, E. N. (2016). Relationship Between Information Literacy and Use of Electronic Information Resources by Postgraduate Students of the University of Ibadan. Article No. 1381.	13	63
45	Kwafoa, P. N. Y., Imoro, O., & Afful-Arthur, P. (2016). Assessment of the use of electronic resources among administrators and faculty in the University of Cape Coast. Article No. 1094.	13	48
46	Gakibayo, A., Ikoja-Odonga, J. R., & Okello-Obura, C. (2013). Electronic information resources utilization by students in Mbarara University Library. Article No. 869.	13	111
47	Cabonero, D. A., & Dolendo, R. B. (2013). Cataloging and Classification Skills of Library and Information Science Practitioners in their Workplaces: A Case Analysis. Article No. 960	13	30
48	Khan, S. A., & Bhatti, R. (2012). A review of problems and challenges of library professionals in developing countries including Pakistan. Article No. 757.	13	38
49	Rehman, S. U., Shafique, F., & Mahmood, K. (2011). A survey of user perception and satisfaction with reference services in university libraries of Punjab. Article No. 624.	13	37
50	Swain, D. K. (2011). Library Philosophy and Practice, 2004-2009: a scientometric appraisal. Article No. 556.	13	50
51	Abubakar, B. M. (2011). Academic libraries in Nigeria in the 21st century. Article No. 446.	13	70
52	Tahir, M., Mahmood, K., & Shafique, F. (2008). Information needs and information-seeking behavior of arts and humanities teachers: A survey of the University of the Punjab, Lahore, Pakistan. Article No. 227.	13	84
53	Doherty, J. J., & Ketchner, K. (2005). Empowering the intentional learner: A critical theory for information literacy instruction. Article No. 70.	13	63
54	Benard, R., Frankwell, D., & Ngalapa, H. (2014). Assessment of information needs of rice farmers in Tanzania; A case study of Kilombero District, Morogoro. Article No. 1071.	12	85
55	Adewole-Odesi, E. (2014). Attitude of students towards E-learning in South-West Nigerian universities: an application of technology acceptance model. Article No. 1035.	12	89
56	Olusegun, O. S. (2013). Influence of job satisfaction on turnover intentions of library personnel in Selected Universities in South West Nigeria. Article No. 914.	12	92
57	Oshinaike, A. B., & Adekunmisi, S. R. (2012). Use of multimedia for teaching in Nigerian university system: A case study of university of Ibadan. Article No. 682.	12	57
58	Adeoye, M. O., & Popoola, S. O. (2011). Teaching effectiveness, availability, accessibility, and use of library and information resources among teaching staff of schools of nursing in Osun and Oyo State, Nigeria. Article No. 525.	12	69

59	Erfanmanesh, M. (2011). Use of Multidimensional Library Anxiety Scale on education and psychology students in Iran. Article No. 563.	12	32
60	Krubu, D. E., & Osawaru, K. E. (2011). The impact of information and communication technology (ICT) in Nigerian university libraries. Article No. 583.	12	125
61	Edegbo, W. O. (2011). Curriculum development in library and information science education in Nigerian universities: issues and prospects. Article No. 560.	12	49
62	Okiki, O. C., & Asiru, S. A. (2011). Use of electronic information sources by postgraduate students in Nigeria: Influencing factors. Article No. 500.	12	89
63	Okiy, R. B. (2010). Globalization and ICT in academic libraries in Nigeria: the way forward. Article No. 501.	12	63
64	Phillips, H. (2010). Great Library of Alexandria. Article No. 417.	12	54
65	Ebiwolate, P. B. (2010). Nigeria public library service to rural areas: Libraries in Niger Delta states. Article No. 365.	12	64
66	Ozoemelem, O. A. (2009). Use of electronic resources by postgraduate students of the Department of Library and Information Science of Delta State University, Abraka, Nigeria. Article No. 301.	12	125
67	Martin, C. K., Maxey-Harris, C., Graybill, J. O., & Rodacker-Borgens, E. K. (2009). Closing the gap: investigating the search skills of international and US students: an exploratory study. Article No. 298.	12	21
68	Parameshwar, S., & Patil, D. B. (2009). Use of the internet by faculty and research scholars at Gulbarga University Library. Article No. 264.	12	62
69	Mirza, M. S., & Mahmood, K. (2009). Web-based services in university libraries: A Pakistani perspective. Article No. 283.	12	35
70	Harande, Y. I. (2009). Information services for rural community development in Nigeria. Article No. 271.	12	98
71	Ugah, A. D. (2008). Availability and accessibility of information sources and the use of library services at Michael Okpara University of Agriculture. Article No. 190.	12	85
72	Madhusudhan, M. (2008). Marketing of library and information services and products in university libraries: a case study of Goa university library. Article No. 175.	12	98
73	Islam, Md. S., & Islam, Md. N. (2007). Use of ICT in libraries: An empirical study of selected libraries in Bangladesh. Article No. 143.	12	78
74	Williams, G. (2007). Unclear on the context: Refocusing on information literacy's evaluative component in the age of Google. Article No. 128.	12	29
75	Etim, F. E. (2006). Resource sharing in the Digital Age: Prospects and problems in African Universities. Article No. 98.	12	62
76	Bianco, C. (2005). Online tutorials: tips from the literature. Article No. 65.	12	24
77	Zanin-Yost, A. (2004). Digital reference: what the past has taught us and what the future will hold. Article No. 59.	12	40

78	Burke, M. (2004). Deterring plagiarism: A new role for librarians. Article No. 10.	12	58
79	Joseph Jestin, K. J., & Parameswari, B. (2002). Marketing of information products and services for libraries in India. Article No. 32.	12	82
80	Fenner, A. (2002). Placing value on information. Article No. 21.	12	34
81	Selga-Cristobal, A. (2018). Expectations on Library Services, Library Quality (LibQual) Dimension and Library Customer Satisfaction: Relationship to Customer Loyalty. Article No. 1706.	11	26
82	Maharana, R. K., & Sethi, B. B. (2013). A bibliometric analysis of the research output of Sambalpur University's publication in ISI Web of Science during 2007-11. Article No. 926.	11	32
83	Bachhav, N. B. (2012). Information Needs of the Rural Farmers: A Study from Maharashtra, India: A Survey. Article No. 866.	11	76
84	Hossain, A., & Islam, S. (2012). Information needs of rural women: a study of three villages of Bangladesh. Article No. 693.	11	46
85	Asogwa, B. E. (2011). Digitization of archival collections in Africa for scholarly communication: Issues, strategies, and challenges. Article No. 651.	11	55
86	Aina, A. J., Ogungbeni, J. I., Adigun, J. A., & Ogundipe, T. C. (2011). Poor reading habits among Nigerians: The role of libraries. Article No. 529.	11	60
87	Isfandyari-Moghaddam, A., & Saberi, M. K. (2011). The life and death of URLs: the case of Journal of the medical library association. Article No. 592.	11	17
88	Lone, F. A. (2012). Reading Habits of Rural and Urban College Students in the 21st Century. Article No. 586.	11	67
89	Abu Bakar, A. B. (2011). Information seeking behaviours of rural women in Malaysia. Article No. 461.	11	48
90	Yousef, A. (2010). Faculty attitudes toward collaboration with librarians. Article No. 512.	11	34
91	Ogboma, M. U. (2010). Access to agricultural information by fish farmers in Niger Delta region of Nigeria. Article No. 424.	11	43
92	Thanuskodi, S. (2009). The environment of higher education libraries in India. Article No. 278.	11	34
93	Thanuskodi, S. (2009). Information-seeking behavior of law faculty at Central Law College, Salem. Article No. 282.	11	62
94	Warraich, N. F., & Tahira, M. (2009). HEC national digital library: challenges and opportunities for LIS professionals in Pakistan. Article No. 248.	11	32
95	Oseghale, O. (2008). Faculty opinion as collection evaluation method: A case study of Redeemer's University library. Article No. 221.	11	41
96	Jaffe, L. D., & Careaga, G. (2007). Standing up for open source. Article No. 127.	11	34
97	Weber, M. A., & Flatley, R. (2006). What do faculty want?: A focus group study of faculty at a mid-sized public university. Article No. 87.	11	24

98	Olajojo, P. O., & Akewukereke, M. A. (2006). Collection development policies: Ground rules for planning university libraries. Article No. 90.	11	35
99	Tella, A., & Ayeni, C. O. (2006). The impact of self-efficacy and prior computer experience on the creativity of new librarians in selected universities libraries in southwest Nigeria. Article No. 80.	11	29
100	Onohwakpor, J. E., & Tiemo, P. A. (2006). The pains and gains of the publication requirement: A survey of librarians at Delta State University, Nigeria. Article No. 81.	11	27